FIRE 74 Course Outline as of Spring 2014

CATALOG INFORMATION

Dept and Nbr: FIRE 74 Title: FIRE PROTECT EQUIP & SYS
Full Title: Fire Protection Equipment and Systems
Last Reviewed: 11/25/2019

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	17.5	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00 Total Student Learning Hours: 157.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade Only
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	FIRE 54

Catalog Description:
An in-depth study of the systems used to provide built-in fire protection to structures including, water systems, fire detection and alarm systems, smoke management systems, fire pumps, automatic fire sprinkler systems, residential fire sprinkler systems, standpipe and hose systems, special extinguishing systems and portable fire extinguishers.

Prerequisites/Corequisites:

Recommended Preparation:
Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:

Schedule of Classes Information:
Description: An in-depth study of the systems used to provide built-in fire protection to structures including, water systems, fire detection and alarm systems, smoke management systems, fire pumps, automatic fire sprinkler systems, residential fire sprinkler systems, standpipe and hose systems, special extinguishing systems and portable fire extinguishers. (Grade Only)

Prerequisites/Corequisites:
Recommended: Eligibility for ENGL 100 or ESL 100
Limits on Enrollment:
Transfer Credit: CSU;
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**			Effective:	Inactive:
CSU GE:	**Transfer Area**			Effective:	Inactive:
IGETC:	**Transfer Area**			Effective:	Inactive:
CSU Transfer:	Transferable	Effective:	Spring 1984	Inactive:	
UC Transfer:		Effective:		Inactive:	

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Identify and compare the common types of fire protection systems.
2. Define the classes of fire extinguishers and their application.
3. Describe fire detection, alarm, and suppression systems.

Objectives:
Upon completion of the course, the student will be able to:
1. Describe the impact of historic fire events on modern fire protection systems.
2. Explain the basic principles of fire behavior and combustion.
3. List the basic components of municipal and private water supply systems.
4. Demonstrate the ability to determine the proper flow and pressure in a variety of water systems and hose lines using mathematics.
5. List the common types of fire alarm systems and describe their operation.
6. Describe the basic components of modern fire detection and alarm systems.
7. Describe the procedures for inspecting and testing fire alarm systems.
8. Describe the types of smoke management systems and their operation.
9. List the different types of fire pumps.
10. Describe the operation, testing and maintenance of fire pumps.
11. List the different types of standpipe systems, their components and intended uses.
12. Describe the operation, inspection, testing and maintenance requirements of standpipe systems.
13. List the different types of automatic fire sprinkler systems.
14. Identify the basic components of automatic fire sprinkler systems.
15. Describe the operating principles and hydraulics of an automatic sprinkler system.
16. Describe the inspection, maintenance and testing requirements for automatic sprinkler systems.

17. Describe the purpose and design criteria of residential fire sprinkler systems.
18. Describe the different types of specialized extinguishing systems.
19. List the different types of portable fire extinguishers and their classifications.
20. Describe the requirements for selection, maintenance and testing of portable fire extinguishers.

Topics and Scope:

I. History of fire prevention and protection systems
   A. The application of fire regulations through history
   B. Effects of fire catastrophes on fire and building codes
   C. The role of the insurance industry in code development
II. Fire behavior and construction
   A. Fire as a chemical reaction
   B. The major phases of fire
   C. Factors that influence fire spread and fire behavior
III. Introduction to Water Supply
   A. Characteristics of water
   B. Understanding water supply
   C. Principles of municipal water supply systems
   D. Private water supply systems
   E. Fire flow and friction loss
      1. Principles and coefficients of friction loss
      2. Calculating the fire flow of hydrants
IV. Fire Detection and Alarm Systems
   A. Types of fire alarm systems
   B. Basic system components
   C. Manual alarm-initiating devices
   D. Automatic alarm-initiating devices
   E. Inspecting and testing fire detection and signaling systems
   F. Record keeping
V. Smoke Management Systems
   A. Purpose of smoke management systems
   B. Types of smoke management systems
   C. Advantages and disadvantages of dedicated and non-dedicated smoke management systems
VI. Fire Pumps
   A. Types of pumps
   B. Pump components and accessories
   C. Calculating pump discharge flow and pressure
   D. Testing, inspection, and maintenance of fire pumps
VII. Standpipes and Hose systems
   A. Classification of standpipe systems
   B. Types of standpipe systems
   C. Components of standpipe systems
   D. Flow and pressure requirements for standpipe systems
   E. Procedures for augmenting standpipe systems
   F. Inspecting and testing standpipes
VIII. Automatic Fire Sprinkler Systems
   A. Types of sprinkler systems
   B. Components of sprinkler systems
   C. Sprinkler system design, hydraulics and water supply requirements

D. Procedures for augmenting sprinkler systems
E. Restoring sprinkler systems
F. Inspecting and testing sprinkler systems

IX. Residential Sprinkler Systems
A. Purpose of residential sprinkler systems
B. Design criteria of residential sprinkler systems
C. Components of residential sprinkler systems
D. Residential sprinkler system design and hydraulics

X. Special Extinguishing Systems
A. Wet chemical extinguishing systems
B. Dry chemical extinguishing systems
C. Gaseous systems
D. Foam extinguishing systems

XI. Portable Fire Extinguishers and their Agents
A. Extinguisher classifications.
B. Extinguisher Types their agents
1. Water
2. Carbon dioxide
3. Foams
4. Halons
5. Dry chemical agents
C. Selection, Maintenance and Testing of extinguishers
1. Installation and placement of extinguishers
2. Portable fire extinguishers on fire apparatus
3. Inspecting, maintaining, and recharging extinguishers
4. Hydrostatic testing
D. Use of portable extinguishers

Assignment:

1. Reading 20-30 pages from textbook
2. Completion of 17 weekly assignment sheets
3. Quizzes, midterm, and final exam
4. Scenarios and role playing
5. Oral or powerpoint presentation
6. Written term project
7. One field trip

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Written term project	Writing 10 - 20%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Scenarios	Problem solving 5 - 10%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None	Skill Demonstrations 0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Quizzes, midterm, final exam	Exams 60 - 80%

Other: Includes any assessment tools that do not logically fit into the above categories.

Presentation, field trip	Other Category 5 - 10%

Representative Textbooks and Materials:
Fire Detection and Suppression Systems, International Fire Service Training Association (IFSTA), current edition